

SUPPLEMENTARY MATERIAL

Trace elements in river waters and sediments before and after a mining dam breach (Bento Rodrigues, Brazil)

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Table 1S. Operational conditions and parameters of ICP-MS

Parameter	
Nebulizer spray chamber	Cyclonic glass
Nebulizer	Meinhard concentric. Type C
RF power (W)	1500
Plasma gas flow rate (L min ⁻¹)	16
Auxiliary gas flow rate (L min ⁻¹)	1.10
Nebulizer gas flow rate (L min ⁻¹)	1.02
Replicates	3
Isotopes	⁷⁵ As, ¹¹¹ Cd, ⁵⁹ Co, ⁵² Cr, ⁶³ Cu, ⁶⁰ Ni, ²⁰⁸ Pb and ⁶⁶ Zn

Table 2S. BCR protocol

Shaking	Time (h)	Temp. (°C)	Vol. (mL) ^a	Extractants	Fraction	Step
40 rpm	16	22 ± 5	32	CH ₃ COOH 0.11 mol L ⁻¹	Exchangeable and acid-soluble	1
40 rpm	16	22 ± 5	32	NH ₂ OH·HCl 0.5 mol L ⁻¹ (pH 1.5) ^b	Reducible	2
Occasional	1	22 ± 5	8	H ₂ O ₂ 8.8 mol L ⁻¹ (pH 2) ^b	Oxidizable	3
Occasional	1	80 ± 5				
Occasional	1	80 ± 5	8	H ₂ O ₂ 8.8 mol L ⁻¹ (pH 2) ^b		
40 rpm	16	22 ± 5	40	NH ₄ OAc 1 mol L ⁻¹ (pH 2) ^b		
Microwave digestion			12	Aqua regia (HCl/HNO ₃ , 3:1)	Residual	4

^a Related to sample weight of 0.8 g.

^b pH values adjusted with concentrated nitric acid.

Table 3S. Analytical figures of merit for the quantitative determination of As, Cd, Co, Cr, Cu, Ni, Pb and Zn by ICP-MS

Parameters	Isotopes							
	⁷⁵ As	¹¹¹ Cd	⁵⁹ Co	⁵² Cr	⁶³ Cu	⁶⁰ Ni	²⁰⁸ Pb	⁶⁶ Zn
Limit of detection ^a (µg L ⁻¹)	0.07	0.03	0.01	0.05	0.07	0.08	0.04	0.09
Limit of quantification ^b (µg L ⁻¹)	0.21	0.09	0.03	0.15	0.21	0.24	0.12	0.27
Linear correlation coefficient (r)	0.999	0.998	0.999	0.998	0.999	0.999	0.998	0.999
Calibration range (µg L ⁻¹)	0.1–100	0.1–100	0.1–100	0.1–100	0.1–100	0.1–100	0.1–100	0.1–100
Measurement precision ^c (%)	1.2	1.7	1.1	1.5	1.9	1.4	1.2	1.6

^a LOD = three times the average of the standard deviation of ten blanks divided by the slope of analytical curve.

^b LOQ = 3 × LOD.

^c Coefficient of variation obtained from n = 10 measurements of a standard solution containing 10 µg L⁻¹ of each element.